

identified in the stomach contents it is possible that the attraction to these baits is due to a chemotactic stimulus.

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14. A NOTE ON THE IDENTITY OF *ONYCHIURUS GRANULOSUS* STACH AND *O. PSEUDOGRANULOSUS* GISIN (COLLEMBOLA : ONYCHIURIDAE)

(With three text-figures)

The controversy relating to *O. granulatus* Stach and *O. pseudogranulosus* Gisin has been left unsettled since Stach (1954) considered the latter species to be identical with the former on the assumption that Gisin's failure to observe the ventral organ in the male specimens of *O. pseudogranulosus* was due to the forms examined being immature—other phenotypic differences between them were considered by Stach to be insignificant. In the light of this disagreement between two pioneer Collembolan taxonomists the present author felt it imperative to undertake this investigation to resolve the controversy.

The descriptions below are an addition to the original findings and are based on some new chaetotactic criteria of the syntypic materials

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(specimens of *O. granulatus* and *O. pseudogranulosus* were obtained from Prof. Jan Stach of Krakow and Dr. H. Gisin of Geneva respectively).

DESCRIPTION

O. pseudogranulosus

BODY :

Abdomen broadened especially in adult females ; Abd. VI distinctly visible in the upper view.

Antennae : Ant. Org. III with 2 straight granulated sense clubs, four finely granulated papillae, 4 setae, and 2 sense rods.

P.A.O. With 7-10 vesicles separated from each other.

Pseudocelli. $\frac{33/133/33333}{1/000/1212}$; each subcoxa with 2 pseudocelli ;

pseudocelli on posterodorsal part of head disposed as in the text-figure 1.

Legs. Unguis untoothed ; Unguiculus without basal lamella ; relative lengths of Unguis III : Unguiculus III as 21 : 21.

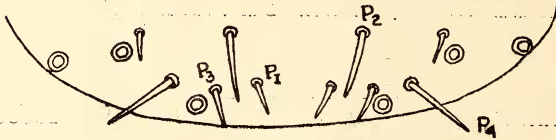


Fig. 1. *Onychiurus pseudogranulosus* Gisin

Posterodorsal part of head

CHAETOTAXY :

I antennal segment. Ventrally with 5 setae as in IV instar of *O. fimatus*.

Anterodorsal part of head. With one median seta A_0 and twelve setae $B_2, B_3, B_5, B_7, B_8, C_1, C_2, C_3, C_4, D_1, D_2,$ and D_3 on either side of it (Text-fig. 2).

Posterodorsal part of head. With 4 setae P_1, P_2, P_3 and P_4 of which P_4 largest and inserted in between inner two pseudocelli, P_2 placed forward of others and much longer than either P_1 or P_3 (Text-fig. 1).

Tergite of Th. I. With 5 setae N_2, N_3, N_4, N_7 and N_9 disposed as in the text-fig. 3.

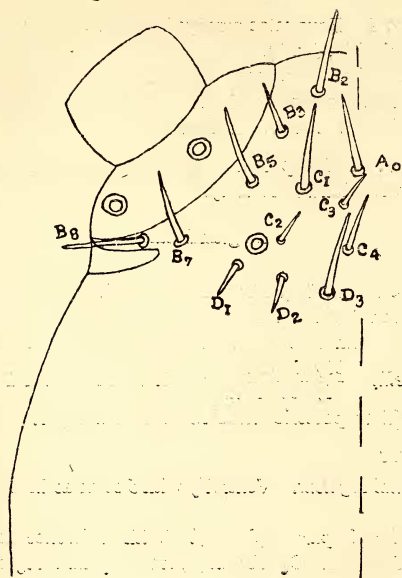


Fig. 2. *Onychiurus pseudogranulosus* Gisin
Anterodorsal part of head

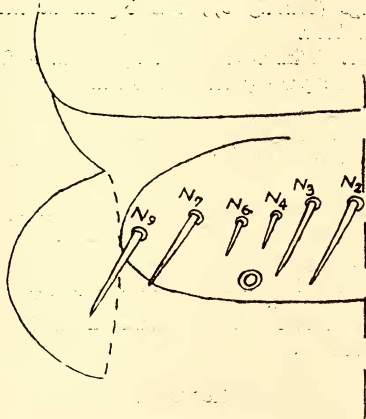


Fig. 3. *Onychiurus pseudogranulosus* Gisin
Tergite of Th. I.

Subcoxa I. Four setae arranged as in *O. moniezi* Bagnall (vide Choudhuri 1963, fig. 8).

Ventral tube. One basal seta; no anterior seta; distally 7 setae (usually) arranged as in *O. imperfectus* (Denis).

Ventral organ in male. Absent.

LOCALITY. 1 Damp rotten wood, Grotte de peyrans, Ariege, France; 2. Switzerland; 3. Italy.

O. granulosus

BODY:

Antennae. Ant. Org. III with two straight granulated sense clubs, 5 finely granulated papillae, 5 setae, and 2 sense rods.

P.A.O. With 8-10 vesicles separated from each other.

Pseudocelli. $\frac{33/133/33323}{1/000/1212}$; each subcoxa with 2 pseudocelli; pseudocelli on posterior head as in the text-fig. 1.

CHAETOTAXY:

I antennal segment. Ventrally with 5 setae as in *O. pseudogranulosus*.

Anterodorsal part of head. With reference to the text-fig. 2 seta labelled as C_4 absent; setae C_1 and A_0 of equal size; and seta C_3 smallest.

Posterodorsal part of head. As in *O. pseudogranulosus*.

Tergite of Th. I. Usually one row of six setae of which 4 equally large (Text-fig. 3); seta N_6 an addition to those of *O. pseudogranulosus*.

Subcoxa I. With five setae arranged as in *O. fimatus* Gisin.

Dorsomedian part of Abd. II. As in *O. richardsi* Choudhuri, 1958a.

Ventral tube. As in *O. pseudogranulosus*.

Ventral organ in male. Present and as illustrated by Stach (1954).

Upper anal valve. Setal arrangement on upper surface as in *O. parthenogeneticus* (Choudhuri 1958b); outer semicircular margin as in *O. fimatus*.

All other chaetotactic characters as in *O. imperfectus*.

LOCALITY. Needle litter, Tatra mountain (1350 m. alt.), Skorusniak, Poland.

DISCUSSION

From the above description it will be noted that in many characters such as blunt setae over the body, granulation of the cuticle, general

shape of the body, and the pseudocelli all over the body except that on the tergite of Abd. V, these two species are in complete agreement. Nevertheless, they can be distinguished from each other by at least 5 reliable characters as follows:

<i>O. granulosus</i>	<i>O. pseudogranulosus</i>
1. Seta C_4 over anterodorsal part of head absent	Seta C_4 over anterodorsal part of head present
2. Subcoxa I with 5 setae	Subcoxa I with 4 setae
3. Ant. Org. III with 5 papillae and 5 setae	Ant. Org. III with 4 papillae and 4 setae
4. Tergite of Abd. V with 2+2 pseudoceilli	Tergite of Abd. V with 3+3 pseudoceilli
5. Presence of characteristic ventral organ in male	No ventral organ in male

On examining several full-grown male individuals collected from different localities, the author has failed to find the ventral organ in any of them. As such the objection, raised by Stach (1954), as to the failure of Gisin to notice the ventral organ owing to his materials being immature cannot be upheld. Moreover, leaving aside the differences in the structure of the Ant. Org. III and the pseudoceilli on the tergite of Abd. V, which in the opinion of Stach are of no significance due to their variable nature, the other three points of disagreement are convincing enough to separate these two species. Evidently *O. pseudogranulosus* is a valid species, and any attempt to synonymise it with *O. granulosus* is erroneous.

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15. DORMITORIES OF *CHALYBION BENGALENSE*
DAHLB. (HYMENOPTERA : SPHECIDAE)

Several wasps of both sexes of the common domestic species *Chalybion bengalense* Dahlb. were observed to gather in a small lavatory at Unit 5, Type VIII, No. 2, Bhubaneswar, in the afternoon. This lavatory is in a courtyard and separated from other rooms in the house. In the evening, these wasps settled on the hanging chain of a cistern, where they spent the night. They also settled on this chain during the day if it was cloudy or raining. The chain hangs freely, and is composed of 16 links each about 3.7 cm. long, in the form of a figure of 8, with one loop of the 8 in a plane perpendicular to that of the other, each loop being about 8 mm. broad. At the bottom of the chain is a handle connected to the chain by an S-shaped piece. The top of the chain is connected to the shaft, also by an S-shaped link. The bottom of the handle is 136 cm. above the floor of the lavatory and the top of the chain about 2 m. above the floor and 44 cm. below the ceiling. Observations were begun on 18.x.1963. The date and time of each observation with the number of wasps present and their positions (when noted) is given below. The links are counted from below :

Sunrise and sunset timings for this period were about 05.50 and 17.15 respectively.

From the above observations, it is seen that up to 15 wasps spent the night on this chain, this number gradually decreasing till no wasp was seen on the chain after 5.xi.1963. This species, like some others in this part of India, disappears during the winter. Eggs laid after about September spend the winter as diapausing final instar larvae, some of them completing their metamorphosis in about February, but most of them doing so in about May (Jayakar & Spurway 1964).

The wasps also collected on this chain when the weather was not suitable for their activities outside.